

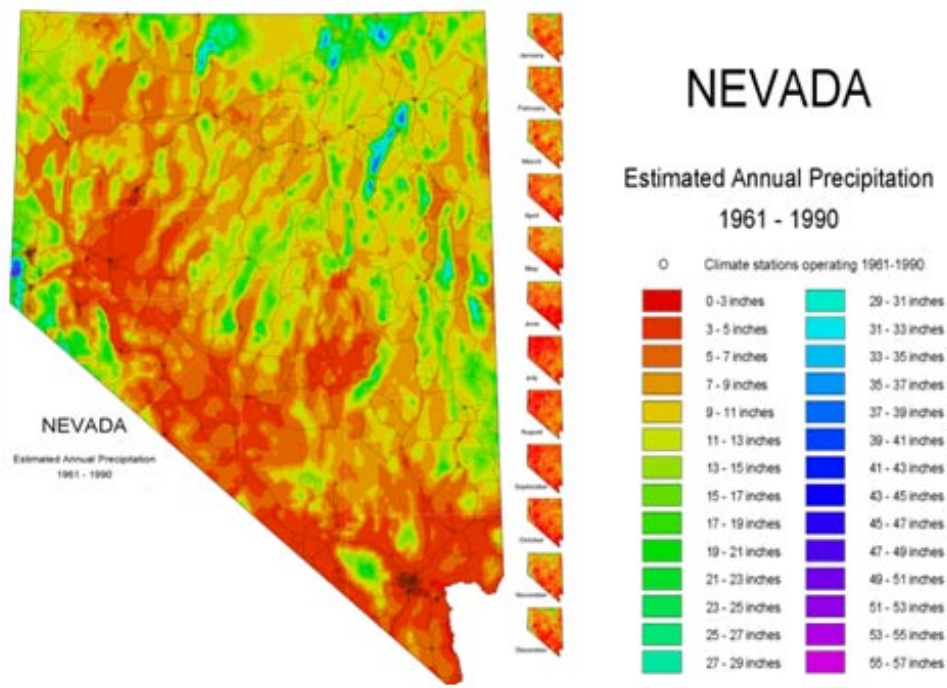
CHAPTER 3

Measuring Precipitation

Nevada has often been referred to as the driest State in the Union. Based on average annual precipitation, this is a true statement. In general, Nevada receives less than 10 inches of precipitation over an average year (based on records for the period 1961–1990). In times of drought, decreases in the annual precipitation have put additional stress on our water resources.

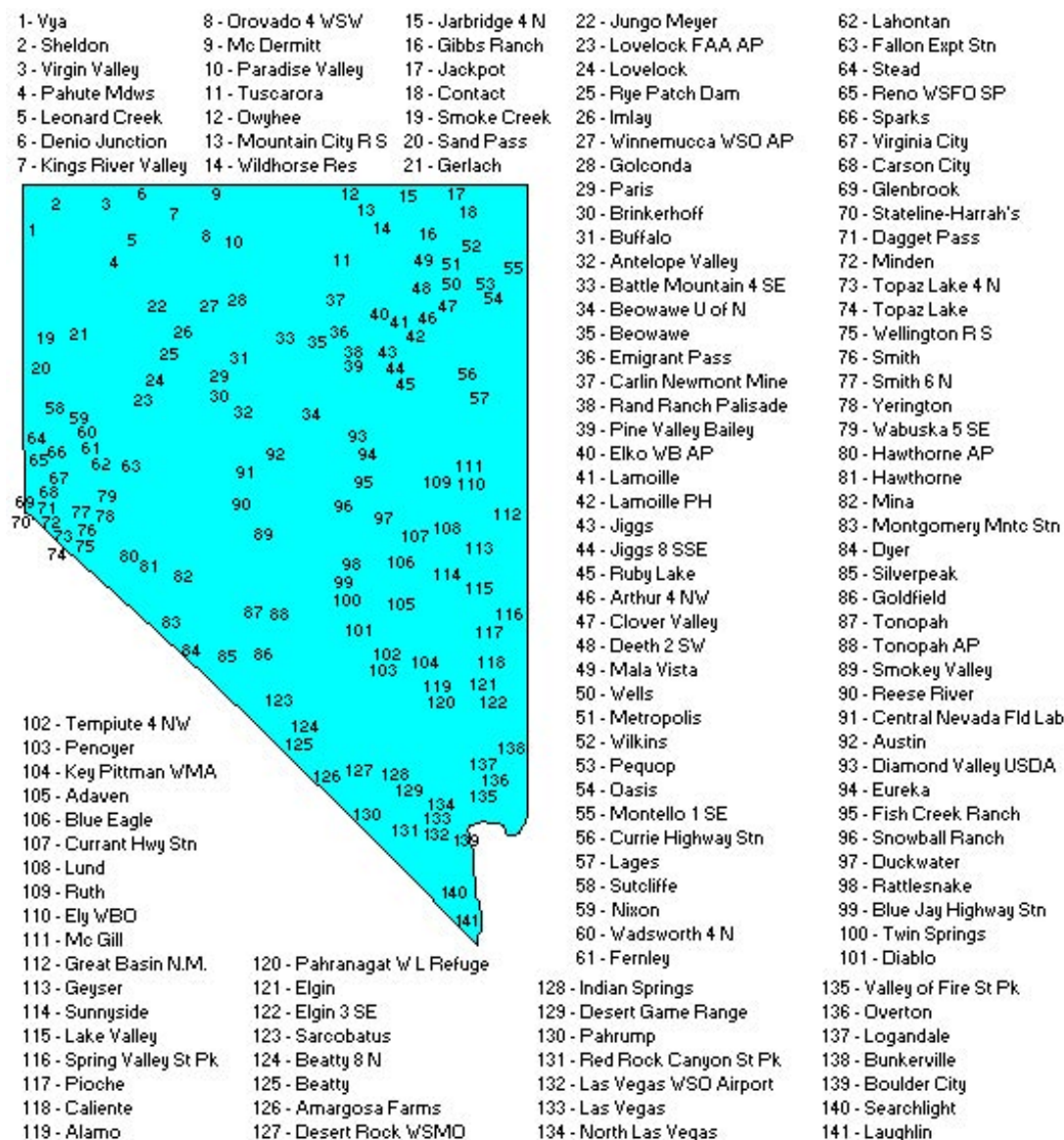
When referring to precipitation, it includes snowfall and rainfall. In reality, snowfall and rainfall in the mountains of Nevada account for most of the total precipitation for the State. The reason for this is that higher elevations in the mountains cause moving air masses to rise and become cooler. As the air cools, it no longer can hold as much moisture as it could in lower, warmer elevations and the moisture condenses. The result is precipitation on the mountains. Measuring precipitation in Nevada is an important science because many of our estimates of water budgets are based on this information.

The map below shows a graphic representation of precipitation distribution for Nevada. The locations of major mountain ranges can be seen by the distribution of the precipitation.



Source: This figure was compiled from estimated annual precipitation values calculated by the PRISM Climate Mapping Program at Oregon State University. The small side maps show estimated precipitation in each month. Precipitation values are interpolated from estimates made on a 1 kilometer grid. (Nevada Department of Conservation and Natural Resources, 2004).

Precipitation is measured at various sites across Nevada. Many sites are at airports and public facilities, but some sites are on private lands. In addition to precipitation, other weather data, such as temperature, wind speeds, wind directions, etc., also are recorded. These stations typically use mounted rain gages that are read regularly so that each precipitation event is recorded (date, time, and amount). A distribution of these stations in Nevada is shown below:



Source: Nevada Climate Summaries Imagemap: National Resources Conservation Service, National Water and Climate Center (Desert Research Institute, 2004).

Another source of precipitation data in Nevada is the National Trends Network (NTN), which is operated by the USGS. Two active gages are in Nevada which consist of large bucket collectors with sensors in the lids. As soon as the sensors detect moisture, the lids automatically open and collect the precipitation. These sites are visited every week and the amount of water collected as precipitation is determined by measuring the weight of the water in the collector. In addition to water volume, samples are collected and measured for chemistry (to determine what is being deposited from the atmosphere).

One more source of precipitation data in Nevada are high-altitude bulk precipitation stations. These are towers (around 12 feet tall), made of aluminum, that collect rainfall and snowfall throughout the year. The towers are placed at high elevations in the mountains in order to collect precipitation data in these remote locations. The stations are measured twice a year (typically in May and October). In addition to the precipitation collected at the towers, these stations contain mineral oil to prevent evaporation from the collectors and antifreeze to reduce the chance of freezing during the winter months.



**High-altitude precipitation gage in Kyle Canyon, Mt. Charleston, Nevada.
Photograph by J.W. Wilson, USGS.**



Thunderstorms over Battle Mountain. Photograph by R.W. Plume, USGS.